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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,402	01/14/2002	Keiji Mabuchi	09792909-5299	2077

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EXAMINER

HENDERSON, ADAM

ART UNIT PAPER NUMBER

2622

DATE MAILED: 12/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,402

Applicant(s)

MABUCHI ET AL.

Examiner

Adam L. Henderson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-13 is/are rejected.
- 7) ☒ Claim(s) 1-9 and 14-24 is/are allowed.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3 November 2006 has been entered.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the image pickup device where electrons are accumulated with a negative gate voltage and the image pickup device where holes are accumulated with a positive gate voltage must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Currently the drawings do not show any difference between the two concepts, as such drawings showing the differences must be provided.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

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be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Response to Arguments

3. Applicant's arguments, see pages 7-9, filed 3 November 2006, with respect to claims 1-3; 7-9; and 14-18 have been fully considered and are persuasive. The rejection of claims 1-3; 7-9; and 14-18 has been withdrawn.

4. Applicant's arguments, see pages 9-10, filed 3 November 2006, with respect to the rejection(s) of claim(s) 10-13 under 35 USC §103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Early (US Patent 3,896,485).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uya et al. (US Patent 6,784,935) in view of Early (US Patent 3,896,485).

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7. With regard to claim 10 Uya et al. disclose a solid-state image pickup device (solid state image pickup device 3, FIG. 4) including pixels each of which comprises a photodiode (photodiodes 31, FIG. 4), a detection portion (capacitor C1, FIG. 18B) and a transfer transistor (read gate MOS transistor TR1, FIG. 18B) for transferring charges accumulated in said photodiode to said detection portion (column 10 lines 28-37), wherein an overflow path for discharging charges overflowing from said photodiode discharges the charges in a depth direction of a substrate (column 6 lines 30-43) [the overflow is referred to as a vertical overflow drain, if it overflows vertically, then it is overflowing in a depth direction as opposed to a horizontal drain which would overflow in a width or length direction]. Uya et al. fail to disclose that the overflow path is formed in a bulk out of a channel portion of said transfer transistor.

Early discloses an overflow path (region 14, FIG. 1) is formed in a bulk out of a channel portion (layer 12, FIG. 1, column 5 lines 13-21).

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the solid-state image pickup device of Uya et al. to include the channel portion overflow path of Early in order to prevent charge from overflowing into adjacent elements or electrodes (Early, column 5 lines 19-21).

8. With regard to claim 11 Early discloses wherein an overflow path is formed of an area extended from the portion just below said photodiode to a semiconductor substrate and said area is formed of an n-type semiconductor region having an impurity concentration lower than that of a semiconductor well region or a p-type semiconductor region (FIG. 1, column 2 line 60 – column 5 line 21).

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9. With regard to claim 12 Early discloses wherein said overflow path is formed in the area between said photodiode and said detection portion in each pixel is formed of an n-type semiconductor region having an impurity concentration lower than that of a semiconductor well region or a p-type semiconductor region (FIG. 1, column 2 line 60 – column 5 line 21).

10. With regard to claim 13 Early discloses wherein an overflow path is formed of an area extending from the portion just below said photodiode and the area between said photodiode and said detection portion to a semiconductor substrate in each pixel is formed of an n-type semiconductor region having an impurity concentration lower than that of a semiconductor well region or a p-type semiconductor region (FIG. 1, column 2 line 60 – column 5 line 21).

Allowable Subject Matter

11. Claim 1-9 and 14-24 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam L. Henderson whose telephone number is 571-272-8619.

The examiner can normally be reached on Monday-Friday, 7am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ALH
7 December 2006



NGOC-YEN VU
SUPERVISORY PATENT EXAMINER